meters, the amplitude of the daily variation of air temperature increases, other things being equal, with the speed of the wind.

"3d. It appears, therefore, that in our situation, it is possible to conclude that there is a certain layer of air situated at a relatively low altitude above the earth in which the diurnal variation of temperature is independent of the speed of the wind."—*C. L. M.*

THE INFLUENCE OF THE VERTICAL DISTRIBUTION OF TEMPERATURES ON THE VELOCITY OF THE WIND NEAR THE SURFACE.

By C. E. BRAZIER.

[Abstracted from Comptes Rendus, Paris Acad., June 10, 1919, pp. 1160-1161.]

Having previously shown that the speed of the wind influences the vertical distribution and diurnal variation of the meteorological elements in the lower layers of the atmosphere (see abstract above), the author now finds that a comparative study of the gradient and of the speed of the wind near the surface (over the continents) demonstrates that the diurnal variation in the speed of the wind can not be explained by any diurnal change of the gradient, but only by an exchange between the surface and higher layers, the intensity and extent of which would depend upon the vertical temperature distribution. Utilizing observations at the Central Office (elevation 21 meters) and the Eiffel Tower (elevation 305 meters), and obtaining the gradients from the daily maps, he investigates the effect of vertical temperature changes upon the winds given by the gradients. Preliminary results indicate that at the Central Office whatever the direction and value of the gradient, the measured wind speed is on the average, less, for that given gradient, when there is an inversion of temperature, than when the contrary is true; the speed increases progressively as the decrease of temperature upward becomes more marked in the lower 300 meters. At the summit of the Tower, however, the speed, for a given gradient, becomes a maximum when the temperature at that level approaches the simultaneously existing temperature at the Central Office. These results are not due to the greater frequence of inversions during light winds.

The results indicate that the ratio of wind velocity to gradient at the height at which anemometers are placed is too greatly influenced by the vertical temperature distribution for the latter to be neglected in the experimental determination of the law connecting the two quantities.—*E. W. W.*

ON THE RELATION OF WIND TO THE GRADIENT IN THE LOWER LAYERS OF THE ATMOSPHERE.

By C. E. BRAZIER.

[Abstracted from Comptes Rendus, Paris Acad., Oct. 27, 1919, pp. 730-733.]

In the paper abstracted just above the author showed that the speed of the wind in the lower layers of the atmosphere was not only dependent upon the gradient, but also upon the vertical distribution of temperature. In this paper he discusses the angle made by the wind direction and the gradient, which is dependent upon the pressure distribution and also upon the vertical distribution of temperature. First, with a constant pressure gradient, he finds that the angle between the wind and the gradient at the surface is less when there is an inversion of temperature. With the temperature gradient constant, and the pressure gradient increased, the wind at the surface blows more nearly along the isobars. At the top of Eiffel Tower, with a constant pressure gradient, the effect of the inversion is much less marked, and what change there is appears to be in the opposite direction, i. e., toward parallelism with the isobars. In treating the angle between the wind at the top of the tower and that at the surface, use is made of the study of Angot, who found a diurnal variation in this difference; and this diurnal variation can be considered the result of the variations in the vertical distribution of temperature. The study of the concomitant variations of the temperature and of the speed of the wind in the first 300 meters leads to a conclusion that the total variation in the vertical distribution of temperature near the ground affects a layer of air relatively thin, but that its effect is felt to an elevation greater than that at which the gradient wind is usually found.—*C. L. M.*